



Lab Accident Case Studies

Lab Safety Coordinators' Meeting

April 6, 2011



Case #1

Thomas Twothumbs has been given the task of plugging the ends of pipettes with cotton. He is plugging right along when one of the pipettes breaks and he accidentally pushes it into the palm of his hand.

Unplugged pipettes cost \$25.86 for 250 and Plugged pipettes = \$27.95 for 250

1. Review this case and decide:
2. What can be done to make this practice safer?
3. Is there a need to continue this practice? If yes, please justify.
4. Can you think of other practices like this on campus that should be discontinued?

Case #2

Franco Firenza is flaming probes in a biology lab using a Bunsen burner and 70% ethanol. Suddenly, the reservoir of ethanol catches on fire. Franco yells “FIRE, everybody out!” and he clears everyone out of the room. He pulls the Fire Alarm on his way down the stairs.

1. What must happen next, in addition to the alarm being pulled?
2. Should Franco have tried to put the fire out? Explain.
3. How do you know if everyone is safe?
4. Did Franco do a good job?

Case #3

Frances Frost is quenching n-butyl lithium in the fume hood when she realizes that she is using a molarity that is ten times stronger than the procedure calls for. Frances asks for assistance from another experienced lab member. They try to quench the n-butyl lithium but a fire erupts. The lab is evacuated, some members went to the floor below and some went out of the building; and someone calls 911 on their cell phone. A sprinkler is activated and some lab staff use fire extinguishers to put the fire out. The Fire Department notifies EH&S and EH&S is asked to pull the fire alarm to empty the building.

1. What could have been done to prevent this fire?
2. When should the alarm have been pulled?
3. Should everyone have evacuated out of the building, initially?
4. Once the building was shut down, what were the immediate concerns?

Case #4

Paul E. Canister needed a container for his acid waste. He was in a hurry and grabbed the first container that he could find: a one gallon paint can. He poured the waste into the can, labeled it and left for the summer. Paul returns after the summer and realizes the waste was never picked up. He places a Hazardous Waste Request for EH&S to get the acid waste out of the lab. EH&S shows up to move the container and there is big trouble....

1. What do you think happened over the summer?
2. What type of container should the acid waste should have been placed in?
3. If a lab member notices a leaking container, what should happen?
4. Should someone have noticed this problem earlier? How could it have been caught?

Case #5

Justin Thyme was working with a diazo compound. When he worked with this compound on a small scale, his experiments worked very well, and he knew he was on to something. So, he thought, it is time to scale this experiment up to the big time! He started to do so without investigating what the literature might have to say about this. As he isolated more of the compound, and there was an explosion, causing severe injuries to himself (9 hours in surgery). EH&S arrived to assist and another explosion occurred, sending an EH&S employee to the hospital as well.

1. What could have been done to prevent the explosions?
2. What could have been done to reduce the injuries?
3. Are there policies in place to protect co-workers from large scale experiments?
4. Could this work have been performed safely?

Case #6

Gina Gelato is running her polyacrylamide gel electrophoresis (PAGE). She is not very successful and in the end she takes all of her gels and throws them in the trash with disgust. That evening, the custodial staff come through come through to empty the trash and are worried about what might be in the bag.

1. Is acrylamide a hazardous substance?
2. Is it ok to throw gels in the trash?
3. How can this issue be resolved?
4. What can the custodial staff do when they find "questionable" trash?

Case #7

Christopher Coldfoot always shows up to his lab in shorts and sandals. He says if it is OK for the boss (PI: Joe Cool) it is OK for him. Christopher is going to freeze some tissues so he grabs his trusty Styrofoam box and heads out for the liquid nitrogen. He adds approximately a liter of LN2 to his box and heads back to his lab. As Christopher turns the corner in the hallway, he literally runs into his PI; Joe Cool. Both men are badly injured.

1. What is appropriate lab attire?
2. What is appropriate attire for handling cryogenic liquids?
3. What is the proper equipment for transporting cryogenic liquids?
4. Who is ultimately responsible for this mishap?
5. What types of injuries would you expect these men to have?

Case #8

Iris Lenz is warming some buffer in a stoppered bottle. Since there aren't any "hazardous chemicals" in use, Iris isn't using her safety glasses. The bottle builds up too much pressure. When Iris goes to move it, she is unaware of this and the bottle ruptures. Iris's face is burned and lacerated, but even worse she gets glass and the buffer in her eyes.

1. How could this accident have been prevented?
2. Who is responsible for this accident?
3. Is the buffer negligible?
4. Do you think this happened in a Chemistry lab?
Could it have happened anywhere?

Prudent Practices in the Laboratory: Handling and Management of Chemical Hazards, Revised Edition 2011 (National Research Council)

Prudent Practices in the Laboratory--the book that has served for decades as the standard for chemical laboratory safety practice--now features updates and new topics. This revised edition has an expanded chapter on chemical management and delves into new areas, such as nanotechnology, laboratory security, and emergency planning.

Developed by experts from academia and industry, with specialties in such areas as chemical sciences, pollution prevention, and laboratory safety, *Prudent Practices in the Laboratory* provides guidance on planning procedures for the handling, storage, and disposal of chemicals. The book offers prudent practices designed to promote safety and includes practical information on assessing hazards, managing chemicals, disposing of wastes, and more.

Prudent Practices in the Laboratory will continue to serve as the leading source of chemical safety guidelines for people working with laboratory chemicals: research chemists, technicians, safety officers, educators, and students.